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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,485	02/27/2004	Thilo Stolze	074313.0105	7994

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EXAMINER	
ARENA, ANDREW OWENS	
ART UNIT	**PAPER NUMBER**
2811	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,485	STOLZE, THILO	
	Examiner	Art Unit	
	Andrew O. Arena	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8,9 and 11-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8,9 and 11-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-6, 8, 9, 11-13, and 14-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

3. The specification states [0017]: "connecting regions prevent the substrate regions from having a reciprocal mechanical influence in adjoining substrate regions," but provides no explanation of how the recited influence is prevented.

4. Claims 1 and 14 recite "a movement of one substrate regions does not translate to an adjacent substrate region." This limitation is not supported by the specification. Furthermore, "to compensate for the tilting by means of an equal and opposite tilting," as recited on pg 9 of applicant's specification, directly contradicts the claim limitation. Claims 2-6, 8, 9, and 11-13 all depend from claim 1, claims 15-21 all depend from claim 14, and all likewise inherit this deficiency.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-6, 8, 9, 11-13, and 14-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. Claims 1 and 14 recite "a movement of one substrate regions does not translate to an adjacent substrate region." The metes and bounds of the limitation "translate" are unclear. Claims 2-6, 8, 9, and 11-13 all depend from claim 1, claims 15-21 all depend from claim 14, and all likewise inherit this deficiency..

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 8, 9, 13-17, and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Fromme et al. (EP 1 083 599) – hereinafter Fromme.

10. Regarding the Fromme reference, an English language abstract is included with the copy of the reference mailed along with this action. The English language abstract section "Novelty" is relied upon for rejection purposes.

11. Regarding claim 1, Fromme discloses (Fig 3) a power semiconductor module (abstract ln 1) comprising a plurality of semiconductor components (21) situated on a substrate (20), wherein

the substrate is divided into a plurality of separate substrate regions (apparent in Fig 3) and

one or a plurality of connecting regions (31) are situated between (physical center lies within vertical space delimited by edges of) adjacent substrate regions, wherein said connecting regions are designed such that a movement of one substrate regions does not translate to an adjacent substrate region (one substrate region can move laterally without causing movement of another substrate region).

12. Regarding claim 2, Fromme discloses (Fig 3) the connecting regions are formed by recesses (between circular portions of 31) in a module housing (32) enclosing said substrate portions.

13. Regarding claim 3, Fromme discloses (Fig 3) the material recesses are slotted (recess between circular portions of 31).

14. Regarding claims 8 and 9, Fromm discloses (Fig 3) the module housing, at least in the regions of the substrate regions, is such that it acts on the substrate regions with a spring force (all solids have an inherent elastic modulus, and inherently exert a spring force on any contacting material).

15. Regarding claim 13, Fromm discloses (Fig 3) the power semiconductor module has a housing (32), which, in the region between the substrate regions, has action points for a mechanical pressure application of the connecting regions (any point

between substrate regions can be regarded as an action point, any point can be for a mechanical pressure application), and the housing applies pressure to the individual substrate regions (abstract ln 5-6).

16. Regarding claim 14, Fromme discloses (Fig 3) a power semiconductor module (abstract ln 1) comprising

a plurality of substrate elements (20) having a top and bottom surface , each substrate element comprising a semiconductor component (21) arranged on the top surface of a substrate element;

one or a plurality of connecting regions (31) are situated between (physical center lies within vertical space delimited by edges of) adjacent substrate regions to form a continuous (broadly interpreted as including gaps such as 130, 131 in applicants Fig 3) bottom surface, wherein said connecting regions are designed such that a movement of one substrate regions does not translate to an adjacent substrate region (one substrate region can move laterally without causing movement of another substrate region).

17. Regarding claim 15, Fromme discloses (Fig 3) a module housing (32) enclosing said plurality of substrate elements.

18. Regarding claim 16, Fromme discloses (Fig 3) the connecting regions are formed by recesses (between circular portions of 31) in the module housing.

19. Regarding claim 17, Fromme discloses (Fig 3) the material recesses are slotted (recess between circular portions of 31).

20. Regarding claim 19, Fromm discloses (Fig 3) the module housing, at least in the regions of the substrate regions, is such that it acts on the substrate regions with a spring force (all solids have an inherent elastic modulus, and inherently exert a spring force on any contacting material).

21. Regarding claim 20, Fromm discloses (Fig 3) a heat sink (30) having a flat (top) surface, wherein the continuous bottom surface of the plurality of substrate elements (20) is arranged on said flat surface.

22. Regarding claim 21, Fromm discloses (Fig 3) the module housing (32) in the region between the substrate elements comprises action points for a mechanical pressure application of the connecting regions (any point between substrate regions can be regarded as an action point, any point can be for a mechanical pressure application), and the housing applies pressure to the individual substrate regions (abstract ln 5-6).

Claim Rejections - 35 USC § 103

23. Claim 4-6, 11, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fromme as applied to claims 1-3 and 14 above, and further in view of Mikio (JP Pub 2001-118987).

24. Regarding claims 4-6, Fromme discloses the power semiconductor module as claimed in claims 1-3, respectively, but differs from the claimed invention only in not expressly disclosing "the substrate is a ceramic." Mikio discloses an analogous device on a ceramic substrate. Therefore, it would have been obvious to a person having

ordinary skill in the art at the time the invention was made to choose a ceramic, as taught by Mikio, as the unspecified substrate material of Fromme; for at least the purpose of high heat dissipation (JPO machine translation of Mikio: [0003]).

25. Regarding claims 11 and 12, Fromm discloses the housing, at least in the regions of the substrate regions, is such that it acts on the substrate regions with a spring force (all solids have an inherent elastic modulus, and inherently exert a spring force on any contacting material).

26. Regarding claim 18, Fromme discloses the power semiconductor module as claimed in claim 14, respectively, but differs from the claimed invention only in not expressly disclosing "the substrate is a ceramic." Mikio discloses an analogous device on a ceramic substrate. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to choose a ceramic, as taught by Mikio, as the unspecified substrate material of Fromme; for at least the purpose of high heat dissipation (JPO machine translation of Mikio: [0003]).

Response to Arguments

27. Applicant's arguments filed 03/28/2005 regarding claim rejections under 35 U.S.C. 112 have been fully considered but they are not persuasive. Examiner does not concur with applicants argument that "page 8, line 28 to page 9, line 3 clearly explains that a propagation of movement, namely in the form of tilting, can be avoided." The cited lines clearly assert that "if the substrate region 3 is tilted through an angle" the result is "tilting the substrate region 4". The cited lines further assert clearly the device

will "compensate for the tilting by means of an equal and opposite tilting." Substrate region 4 tilting as a result of substrate region 3 tilting, as described by the applicant, clearly contradicts applicant's claim that "a movement of one substrate region does not translate to an adjacent substrate region."

28. Applicant's arguments filed 03/28/2005 regarding art-based claim rejections have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew O. Arena whose telephone number is (571) 272-5976. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SUPERVISORY PATENT EXAMINER
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